

METRIC

FACILITIES UNIT COSTS - MILITARY CONSTRUCTION **PAX NEWSLETTER NO. 3.2.2 - 15 Mar 2005**

This updated newsletter supersedes the PAX Newsletter No. 3.2.2, **09 Jan 2004**, and updates the Appendix A, Facility Unit Cost Table, Appendix C, Tri-Service Military Construction Program (MCP) Index, and Table 1, Size Adjustment Factors, contained in TM 5-800-4, Programming Cost Estimates for Military Construction, dated May 1994. It may be used as a guide for preparation and/or review of the Army military construction cost estimates for programming and budgeting purposes for FY **2007/2008** and beyond unless otherwise noted. This newsletter is also published and maintained on the web page at http://www.hq.usace.army.mil/cemp/e/ec/ec_new.htm#guide.

1. APPENDIX A - FACILITY UNIT COST TABLE

a. Most unit costs are based on historic construction award data. Unit costs for a category codes have a limited number of awarded projects. The unit cost database includes only new construction projects and does not include data from renovation or addition/alteration projects.

b. The tabulation is arranged numerically by category codes. Category code series descriptions are contained in DA Pamphlet 415-28, Guide to Army Real Property Category Codes, 3 October 2003. Where unit costs span a group of subcategories, the five (5) digit category code is designated by adding XX behind the three (3) digit main category code for this group. For example, 851XX and 852XX are designated for roads, streets, parking, apron and sidewalks pavements.

c. Unit costs are escalated to 1 October **2007** (MCP Index = **2391**), the assumed midpoint of construction for **FY07** projects, with an area cost factor (ACF) of 1.00. The MCP inflation indices shown in Appendix C should be used to escalate the **FY07** unit costs beyond **1 Oct 07**. These unit costs include installed (built-in) building equipment and furnishings normally funded with the MILCON funds as described in AR 415-15, contractor's markup cost for overhead & profit, but do not include allowances for construction contingencies and supervision, inspection, and overhead (SIOH), or construction cost growth resulting from user changes, unforeseen site conditions, or contract document errors and omissions.

d. The unit costs for Primary Facilities (buildings) in Appendix A, Part I, are for the primary facilities gross areas only, and do not include costs for support facilities, equipment acquired with other fund (non-MILCON) sources, anti-terrorism/force protection, sustainable construction features, or construction cost growth resulting from unforeseen site conditions or user requested change orders. For medical facilities, the building costs include Categories A and B equipment, but exclude Categories E and F equipment.

d. Unit costs should be adjusted by the appropriate area cost factor, cost escalation factor as described in Appendix C, size adjustment factor in Table I, and other adjustment factors as described in the TM 5-800-4, when applicable. The ACF list is contained in Appendix B, Location Adjustment Factors in the TM 5-800-4, and updated by the latest PAX Newsletter No. 3.2.1, Area Cost Factors Indexes, which is also available on the web page as addressed above.

e. Building size identified in Part I of Appendix A is a reference size, but may not be a standard size from the Army Standard Facilities design criteria. This quantity may be used in conjunction with Table I, Size Adjustment Factors, to determine an appropriate size adjustment factor for the proposed facility.

g. Chart A in Appendix A contains unit costs for Sitework Utility Piping. Chart C in Appendix A contains information for unit of measurement conversion factors between Metric and English Systems.

2. APPENDIX C - TRI-SERVICE MILITARY CONSTRUCTION PROGRAM (MCP) INDEX

The base cost index for the unit costs in Appendix A is for an assumed midpoint of construction date of 1 October **2007** (MCP Index = **2391**) as described in paragraph 1.b above. For a project with an anticipated midpoint of construction date other than 1 October **2007**, a cost escalation factor can be determined from this appendix as follows:

Project Anticipated Midpoint Date - **1 January 2009 (MCP Index = 2454)**

Cost Escalation Factor = MCP Index **1 Jan 09 / MCP Index 1 Oct 2007 = 2454/2391 = 1.0263**

3. PROPONENT OF THIS NEWSLETTER: HQUSACE/CECW-EI, 202-761-7503 or DSN-763-7503, and FAX 202-761-8926 and Internet Address: "amitava.ghosh@usace.army.mil".

APPENDIX A - FACILITY UNIT COST TABLE
PART I - BUILDINGS AND MAJOR FACILITIES
(15 March 05)

CATEGORY					UNIT COST	
CODE	ITEM	QUANTITY		UNIT	\$/UNIT	REMARK
111XX	AIRFIELD RUNWAYS					SEE CATCODE 851XX
112XX	AIRFIELD TAXIWAYS					SEE CATCODE 851XX
113XX	AIRFIELD APRONS					SEE CATCODE 851XX
116XX	AIRFIELD MISC. PAVING					SEE CATCODE 851XX
124XX	FUEL STORAGE (OPERATING)	3,785	3,800	L	\$1.16	UNDERGRD STG - INCLUDES EXCAVATION, BACKFILL & MANHOLE, EXCLUDES EXTERIOR PIPING & PUMPING
		18,927	19,000	L	\$1.10	
		37,854	38,000	L	\$1.05	
		75,708	76,000	L	\$1.02	
		113,562	113,500	L	\$1.00	
13120	COMMUNICATIONS CENTER	550		M2	\$2,182.00	NO SHIELDING
	SATCOM CENTER	550		M2	\$5,909.00	W/ SHIELDING & GENERATOR
13131	INFORMATION PROCESS CTR	1,950		M2	\$2,314.00	AUTOMATIC DATA PROCESSING W/ RAISED FLOOR, ADMIN & STG AREAS
13310	FLIGHT CONTROL TOWER	465		M2	\$2,778.00	
14110	AIRFIELD OPS BLDG	930		M2	\$2,497.00	WITHOUT TOWER
14112	AVIATION UNIT OPS BLDG	1,115		M2	\$1,830.00	SQUADRON
14113	ACCESS CONTROL FAC	25		M2	\$2,133.00	SENTRY STATION
14114	CIDC FIELD OPS BLDG	875		M2	\$1,597.00	
14129	TRAINING AIDS CENTER	75		M2	\$1,323.00	
14132	READY BUILDING	1,860		M2	\$1,433.00	
14162	SCIF FACILITY	2,320		M2	\$2,002.00	
14165	FUELING/POL SUPPORT BLDG	20		M2	\$2,319.00	HOUSES PUMPING EQUIPMENT. ADD PUMPS (\$4500 EA) ADD STG TANKS (SEE CATCODE 124XX) AND PAVING (SEE CATCODE 851XX)
14182	BRIGADE HQS BLDG	1,020		M2	\$1,830.00	
14183	BATTALION HQS BLDG	1,020		M2	\$1,673.00	
14185	COMPANY OPS BLDG	745		M2	\$1,586.00	THIS UNIT COST REFLECTS THE MAXIMUM ALLOWABLE COMBINED PER M ² COST OF ADMIN & READINESS MODULES TOGETHER. AREA FOR ADMIN & READINESS MODULES WILL BE LISTED SEPARATELY. UNIT COSTS FOR ADMIN & READINESS MODULES WILL NOT EXCEED \$1673 AND \$1120 RESPECTIVELY
14955	WASH PLATFORM, ORG	1		EA	\$70,323.00	2 VEHICLES - LOW PRES. W/ WASHWATER TREATMENT
14960	GREASE RACK	1		EA	\$55,052.00	2 VEHICLES
14962	CENTRALIZED WASH FAC	1		EA	\$6,868,318.00	16 STATIONS WITH WASHWATER RECYCLING
17112	FLIGHT SIMULATOR BLDG	2,970		M2	\$1,553.00	BUILDING ONLY
17119	ORGANIZATIONAL CLASSROOM	2,970		M2	\$1,411.00	
17120	GENERAL INSTRUCTION BLDG	2,300		M2	\$1,765.00	
17121	INDOOR FIRING RANGE	520		M2	\$1,247.00	
17123	RANGE SUPPORT BLDG	185		M2	\$1,214.00	
	FIELD RANGE LATRINES	55		M2	\$1,914.00	
17131	COMPACT ITEM REPAIR INST BLDG	560		M2	\$1,334.00	
17132	GEN ITEM REP INST BLDG	2,300		M2	\$1,247.00	
17133	VEHICLE MAINT INST BLDG	2,800		M2	\$1,711.00	
17134	AIRCRAFT MAINT INST BLDG	3,250		M2	\$2,325.00	HIGH BAY BUILDING
17135	LABORATORY INST BLDG	835		M2	\$2,122.00	
17136	AUTO-AIDED INSTRUCTION BLDG	2,300		M2	\$2,002.00	
17137	MATERIAL HANDLING INST BLDG	3,715		M2	\$897.00	
17139	COVERED TRAINING AREA	560		M2	\$481.00	
17140	ARMY RESERVE CENTER BLDG	1,860		M2	\$1,755.00	FOR OTHER RESERVE FACILITIES USE UNIT COST FROM APPROPRIATE FACILITY TYPE

APPENDIX A - FACILITY UNIT COST TABLE
PART I - BUILDINGS AND MAJOR FACILITIES
(15 March 05)

CATEGORY					UNIT COST	
CODE	ITEM	QUANTITY		UNIT	\$/UNIT	REMARK
17142	ARMY NATIONAL GUARD/ARMORY	1,860		M2	\$1,755.00	
17971	OBSERVATION TOWER/BUNKER	75		M2	\$1,980.00	COST EXCLUDES EQUIP
21110	AIRCRAFT MAINT. HANGARS					
	MAINT GEN PURPOSE	2,150		M2	\$2,067.00	
	HIGH BAY MAINTENANCE	3,250		M2	\$2,325.00	
	CORROSION CONTROL	3,250		M2	\$2,122.00	
21120	A/C COMPONENT MAINT SHOP	1,860		M2	\$1,411.00	
21130	A/C PAINT SHOP	6,505		M2	\$2,603.00	
21140	A/C ENGINE TEST CELL FAC	1,210		M2	\$1,597.00	
21210	GUIDED MISSILE MAINT FAC	950		M2	\$1,783.00	
21410	VEHICLE MAINT SHOP - TRACK	2,300		M2	\$1,830.00	
	VEHICLE MAINT SHOP - WHEELED	2,800		M2	\$1,711.00	
21470	OIL STORAGE BLDG	65		M2	\$984.00	
21610	AMMO RENOVATION SHOP	605		M2	\$1,466.00	
21612	AMMUNITION SURVEILLANCE	1,210		M2	\$1,652.00	
21630	AMMUNITION DEMIL. FAC	7,665		M2	\$9,745.00	CHEM DEMILITARIZATION FAC
21710	ELECTRONICS MAINT. SHOP	510		M2	\$1,247.00	
21740	AVIONICS MAINT SHOP	2,150		M2	\$1,733.00	
21850	BATTERY SHOP	465		M2	\$1,247.00	
21881	ABN EQUIP/PARACHUTE REPAIR	750		M2	\$1,959.00	
21885	INST MAINT SHOP, GEN PURPOSE	2,900		M2	\$1,399.00	
21910	ENG/HOUSING MAINT SHOP	2,900		M2	\$1,247.00	
31010	CHEMISTRY LAB	830		M2	\$2,122.00	
31410	GROUND TRANS EQUIPMENT BLDG	2,900		M2	\$1,619.00	
411XX	LIQUID FUEL STORAGE - BULK	400		L	\$464.00	ABOVE GROUND STEEL TANKS INCLUDES FOUNDATION DIKE AND EXTERIOR COATINGS (42 US GALS/BBL)
		800		L	\$309.00	
		1,600		L	\$223.00	
		4,000		L	\$171.00	
		8,000		L	\$124.00	
		16,000		L	\$88.00	
		40,000		L	\$78.00	
		400		L	\$464.00	ABOVE GRD STEEL TANK W/ FLOAT PANS INCLUDES FOUNDATION DIKE, INTERIOR EPOXY LINING & INTERIOR COATING
		800		L	\$309.00	
		1,600		L	\$252.00	
		4,000		L	\$196.00	
		8,000		L	\$153.00	
		16,000		L	\$117.00	
		40,000		L	\$99.00	
42180	IGLOO STORAGE, DEPOT	450		M2	\$2,476.00	HIGH EXPLOSIVE MAGAZINE, WITH EARTH MOUNDING
42183	G P MAGAZINE, DEPOT	930		M2	\$2,368.00	W/O CRANE
42280	IGLOO STORAGE, INST					SEE CATCODE 42180
42283	G P MAGAZINE, INST					SEE CATCODE 42183
43211	COLD STORAGE FACILITY					
	WAREHOUSE W/ PROCESSING	1,000		M2	\$1,453.00	
	COLD STORAGE WAREHOUSE	550		M2	\$1,959.00	
44110	GENERAL PURPOSE WAREHOUSE					
	LOW BAY	3,700		M2	\$872.00	5 M STACK HEIGHT
	HIGH BAY	9,290		M2	\$990.00	UP TO 8 M STACK HEIGHT
44130	CONTROLLED HUMIDITY WHSE, DEPOT	3,720		M2	\$886.00	
44135	HAZARDOUS MATERIAL STORAGE	1,950		M2	\$1,345.00	

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CATEGORY					UNIT COST	
CODE	ITEM	QUANTITY		UNIT	\$/UNIT	REMARK
44150	FLAMMABLE MATERIAL STRHSE	760		M2	\$1,291.00	
44181	VEHICLE STORAGE FACILITY	1,485		M2	\$459.00	OPEN
		1,485		M2	\$678.00	ENCLOSED
44210	AC PARTS STORAGE BLDG	1,485		M2	\$787.00	
44220	G P STORAGE FACILITY, INST					SEE CATCODE 44110
44222	STORAGE SHED, COVERED	2,230		M2	\$350.00	OPEN SIDES
44224	DEPLOYMENT EQUIP STG BLDG	315		M2	\$798.00	
44230	CONTROLLED HUMIDITY WHSE, INST					SEE CATCODE 44130
44240	FLAMMABLE MATERIAL STRHSE, INST					SEE CATCODE 44150
45110	OPEN STORAGE AREA, DEPOT					SEE CATCODE 851XX
45210	OPEN STORAGE AREA, INST					SEE CATCODE 851XX
51010	MEDICAL CENTER/HOSPITAL			M2	\$2,713.00	STATION HOSPITAL
					\$2,917.00	REGIONAL MEDICAL CTR
53060	MEDICAL WAREHOUSE	4,090		M2	\$886.00	
53071	AMBULANCE GARAGE	45		M2	\$733.00	
54010	DENTAL CLINIC	1,860		M2	\$2,723.00	
55010	MEDICAL CLINIC	4,650		M2	\$2,303.00	
	AMBULATORY HEALTH CLINIC	9,290		M2	\$2,551.00	
61050	ADMIN FACILITY GEN PURP	2,300		M2	\$1,733.00	ADP CTR, AUDITORIUM, CAFETERIA, SECURITY, & PRE-WIRED WORK STA. NOT INCLUDED
	PRE-WIRED WORK STATION			EA	\$5,451.00	
62010	UNDERGROUND ADMIN FAC	555		M2	\$1,969.00	HARDENED FACILITY
711XX	FAMILY HOUSING W/SPRINKLERS OR FIRE RATED CONSTRUCTION	N/A		M2	\$861.00	CONUS \$/GROSS M2 INCLUDES POST AWARD & DESIGN COST
	FAMILY HOUSING W?SPRINKLERS OR FIRE RATED CONSTRUCTION	N/A		M2	\$872.00	OCONUS \$/GROSS M2 INCLUDES POST AWARD & DESIGN COST
71410	DETACHED GARAGES	25		M2	\$481.00	SINGLE CAR/MASONRY
					\$306.00	SINGLE CAR/WOOD
71411	CARPORT	25		M2	\$252.00	OPEN SIDES
72111	UNACCOMPANIED PERSONNEL HOUSING, ENLISTED	9,250		M2	\$1,787.00	DOES NOT INLCUDE FREE-STANDING KITHCENETTE EQUIPMENT
	SOLDIER COMMUNITY BLDG	1,360		M2	\$1,619.00	300 PERSON MODULE
NOTE: ALL UNFINISHED, OR FINISHED ATTIC AREAS WITH AN AVERAGE HEIGHT OF 2100 MM (6'-11") MEASURED FROM THE UNDERSIDE OF THE STRUCTURAL SYSTEM AND WITH PERIMETER WALLS MEASURING A MINIMUM 1500 MM (4'-11"), MUST BE COUNTED AS FULL SCOPE.						
72181	BASIC TRAINEE BARRACKS	34,315		M2	\$1,487.00	COST APPLIES TO ENTIRE COMPLEX
	COMPANY/BARRACKS	29,140		M2	\$1,389.00	BLDG ONLY, CENTRAL ENERGY PLANT (IF NEEDED) NOT INLCUED
	BATTALION HQS	2,050		M2	\$1,553.00	
	DINING FACILITY	3,125		M2	\$2,461.00	
72210	DINING FACILITY	2,000		M2	\$2,906.00	INCLUDES MCA FUNDED KITCHEN EQUIPMENT & INSTALLATION COSTS
72410	UNACCOMP. OFFICERS QTRS	4,100		M2	\$1,808.00	DOES NOT INLCUDE FREE-STANDING KITCHENETTE EQUIPMENT
72411	UNACCOMP. OFFICERS QTRS	4,090		M2	\$1,808.00	TRANSIENT
73010	FIRE STATION, COMMUNITY	750		M2	\$1,970.00	
73016	POLICE/MP STATION	390		M2	\$1,608.00	
73017	CHAPEL	1,400		M2	\$2,077.00	

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CATEGORY					UNIT COST	
CODE	ITEM	QUANTITY		UNIT	\$/UNIT	REMARK
73018	RELIGIOUS EDUCATION FAC	1,400		M2	\$1,553.00	WITH FAMILY LIFE CTR. REPORT THIS SPACE SEPARATELY FROM THE WORSHIP SPACES IF COLLOCATED IN A CHAPEL BLD
73046	DEPENDENT SCHOOLS					
	ELEMENTARY	N/A		M2	\$1,701.00	
	JUNIOR HIGH SCHOOL	N/A		M2	\$1,722.00	
	HIGH SCHOOL	N/A		M2	\$1,808.00	
74010	AUDITORIUM G P	370		M2	\$1,477.00	
74011	BOWLING CENTER	700		M2	\$1,970.00	W/ EQUIP - 8 LANES (PIN SPOTTING EQUIP & AUTO. SCORING DEVICE)
74012	CAFETERIA	465		M2	\$1,816.00	
74014	CHILD DEVELOPMENT CENTER	2,300		M2	\$2,002.00	DOES NOT INCLUDE FREE-STANDING FOOD SERVICE EQUIPMENT OR PLAYGROUND AREA AND EQUIPMENT. FOR OUTDOOR PLAY AREA, SEE CATCODE 75018
74021	COMMISSARY W/ OPERATIONAL EQUIPMENT	7,900		M2	\$1,658.00	
74022	SKILL DEVELOPMENT CENTER	2,050		M2	\$1,269.00	NON-AUTOMOTIVE CRAFTS/GENERAL SKILL
74023	CREDIT UNION	280		M2	\$1,444.00	INCLUDES VAULT
74024	SKILL DEVELOPMENT CENTER	1,400		M2	\$1,291.00	AUTOMOTIVE CRAFTS
74025	EDUCATION CENTER	2,800		M2	\$2,045.00	ARMY CONTINUING EDUC SYSTEM FACILITY
74028	PHYSICAL FITNESS CTR	2,800		M2	\$1,884.00	EXCLUDES INDOOR SWIMMING POOL (74042)
74030	SPORT PRO SHOP	2,600		M2	\$1,487.00	SNACK BAR, PRO SHOP SALES AREA INCL
74032	GUEST HOUSE	2,800		M2	\$1,711.00	TEMPORARY LODGING FACILITIES
74033	COMMUNITY SERVICE CENTER	3,160		M2	\$1,608.00	FAMILY SERVICE CTR
74041	MAIN LIBRARY	1,100		M2	\$1,981.00	
74046	CONSOLIDATED OPEN DINING FAC					ALSO REFERRED TO AS CONSOLIDATED CLUB. SEE CATCODE 74047
74047	NCO OPEN DINING / SERVICE CLUB	2,090		M2	\$2,691.00	
74048	OFFICER OPEN DINING					SEE CATCODE 74047
74053	MAIN EXCHANGE	7,430		M2	\$1,335.00	W/ MALL SERVICE SHOPS
74056	EXCHANGE SERVICE OUTLET					SEE CATCODE 74053
74066	YOUTH CENTER	2,300		M2	\$1,959.00	
74068	RECREATION CENTER	2,300		M2	\$1,959.00	
74070	INDOOR ROLLER SKATING RINK	1,860		M2	\$1,127.00	
74072	INDOOR SWIMMING POOL	560		M2	\$1,772.00	25 METER NATATORIUM
74065	RECREATIONAL SUPPORT BUILDING	465		M2	\$820.00	ALSO REFFERED TO AS RECR. EQUIP CHECKOUT
75018	PLAYGROUND, GEN PURPOSE					
	CHILD DEVELOPMENT CTR OUTDOOR PLAY AREA:					
	60 CHILD CAPACITY	560		M2	\$339.00	COST OF PLAY AREA INCLUDES FENCE, EQUIPMENT, AND SHED
	99 CHILD CAPACITY	920		M2	\$273.00	
	122 CHILD CAPACITY	1,135		M2	\$241.00	
	145 CHILD CAPACITY	1,350		M2	\$208.00	
	198 CHILD CAPACITY	1,840		M2	\$175.00	
	244 CHILD CAPACITY	2,270		M2	\$164.00	
	303 CHILD CAPACITY	2,815		M2	\$142.00	
75022	MULTI-PURPOSE ATH FIELD	1		EA	\$192,419.00	TURFED AREA EXCLUDES SITES PREP & ELECTRICAL LIGHTING
75030	OUTDOOR SWIMMING POOL	1,210		M2	\$1,170.00	50 METER WITH CHANGE HOUSE
891XX	PLANT/UTILITIES BLDG	N/A		M2	\$1,794.00	NO PLANT EQUIPMENT
NO CATEGORY CODE IS AVAILABLE FOR FOLLOWING ITEMS:						
	FOUNDATIONS, UNUSUAL					

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(15 March 05)

CATEGORY					UNIT COST	
<u>CODE</u>	<u>ITEM</u>	<u>QUANTITY</u>		<u>UNIT</u>	<u>\$/UNIT</u>	<u>REMARK</u>
	PILING, TREATED WOOD, 15M LENGTH, 300MM BUTT			M	\$90.00	
	PILING, CONCRETE 350 MM SQUARE			M	\$133.00	
	PILING, CONCRETE 400 MM SQUARE			M	\$140.00	
	PILING, CONCRETE 460 MM DIAMETER			M	\$160.00	
	PILING, STEEL H, 15M LENGTH, HP300M			M	\$107.00	
	PILING, STEEL PIPE 300M DIAMETER, CONC FILLED			M	\$137.00	

APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS
(15 March 05)

CATEGORY CODE	ITEM	QUANTITY	UNIT	UNIT COST \$/UNIT	REMARK
81117	POWER PLANT - GAS FIRED		KW	\$1,058.00	EQUIPMENT ONLY - INCLUDES SUPPLY LINES, BOILERS, GENERATORS, SWITCHGEAR, & TRSFR. DOES NOT INCLUDE POWER PLANT BLD
81150	UNINTERRUPTIBLE POWER SUP (UPS)		KW	\$4,808.00	COST INCLUDES STATIC SWITCHGEAR
81160	STANDBY GENERATOR				
		75	KW	\$523.00	COST INCL. BATTERY, CHARGE/MUFFLER/TRANSFER SWITCH & FUEL TANK
		125	KW	\$376.00	
		200	KW	\$300.00	
		300	KW	\$256.00	
89111	POWER PLANT BUILDING		M2	\$1,783.00	NO EQUIPMENT AND SWITCHGEAR
81230	EXTERIOR LIGHTING		M	\$107.00	UG DIRECT BURIAL W/ 500 WATT MV LAMINAR AND MOUNTING OF THE FIXTURE
81241	OVERHEAD ELECTRIC LINES				
	H-FRAME		KM	\$67,950.00	15 KV UP TO 69 KV SHORT LINES, WOOD POLE, 3 PH, 4 WIRE
	OVERHEAD W/ POLES		M	\$53.00	BELOW 15 KV WOOD POLE, 3 PH, 4 WIRE
81242	UNDERGRD ELECTRIC LINES				
	DIRECT BURIAL:				COSTS INCL TRENCH, SAND BASE, TREATED BOARD, BACKFILL AND MARKER
	# 1/0		M	\$53.00	3/C - 600V DB
	# 4/0		M	\$70.00	3/C - 600V DB
	UG DUCTS:				
	1-WAY-100 MM		M	\$77.00	TYPE EB, PVC, CONCRETE ENCASED 75 MM EACH WAY, INCLUDES EXCAVATION AND BACKFILL TO 1 M DEEP
	2-WAY-100 MM		M	\$90.00	
	4-WAY-100 MM		M	\$113.00	
	6-WAY-150 MM		M	\$137.00	
81320	SUBSTATION, LOAD UNINTER. SWITCH 600 AMP		KVA	\$74.00	300 KVA & BELOW W/CLF FUSES. DOES NOT INCL BUILDING (89113)
81360	TRANSFORMERS, PRIMARY DELTA OR Y, 277/480 V SECONDARY				
	150 KVA		EA	\$12,320.00	OIL-FILLED, PAD MOUNTED, 3-PHASE
	500 KVA		EA	\$18,420.00	
	1,000 KVA		EA	\$33,260.00	
	2,000 KVA		EA	\$49,720.00	
82110	HEAT PLANT COAL-FIRED				
	STEAM:				
	14,560 KW		EA	\$4,069,900.00	INCLUDES FURNACE, BOILERS, WATER SUPPLY, PUMPS, PIPELINES, & FUEL & ASH HANDLING FACILITIES
	29,300 KW		EA	\$7,374,440.00	
	43,950 KW		EA	\$10,508,890.00	
	58,600 KW		EA	\$13,463,470.00	
	HITEMP WATER:				
	14,650 KW		EA	\$3,834,400.00	INCLUDES FURNACE, BOILERS, WATER SUPPLY, PUMPS, PIPELINES, & FUEL & ASH HANDLING FACILITIES
	29,300 KW		EA	\$6,156,620.00	
	43,950 KW		EA	\$8,209,560.00	
	58,600 KW		EA	\$10,508,890.00	
82120	HEAT PLANT OIL-FIRED				

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(15 March 05)

CATEGORY CODE	ITEM	QUANTITY	UNIT	UNIT COST \$/UNIT	REMARK
	STEAM:				
	2,930 KW		EA	\$726,110.00	INCLUDES PLANT EQUIP & OIL HANDLING FACILITY
	14,650 KW		EA	\$2,494,480.00	
	29,300 KW		EA	\$4,777,460.00	
	43,950 KW		EA	\$6,930,710.00	
	58,600 KW		EA	\$8,394,910.00	
	HITEMP WATER:				
	2,930 KW		EA	\$656,330.00	INCLUDES PLANT EQUIP & OIL HANDLING FACILITY
	14,650 KW		EA	\$2,316,780.00	
	29,300 KW		EA	\$4,322,830.00	
	43,950 KW		EA	\$6,156,620.00	
	58,600 KW		EA	\$8,006,780.00	
82182	SOLAR HEATING				SEE SOLAR ENERGY CONVERSION - CHART B
82210	STEAM CONDENSATE LINES				INSUL, STEAM & CONDENS COST INCLUDES FITTINGS, ACCESSORIES, 1 M EXCAVATION, BACKFILL AND TESTING
	COMMON CONDUIT:				
	282 MM		M	\$697.00	STM: 50 MM, RET: 40 MM
	250 MM		M	\$633.00	STM: 40 MM, RET: 40 MM
	250 MM		M	\$603.00	STM: 32 MM, RET: 25 MM
	250 MM		M	\$597.00	STM: 25 MM, RET: 25 MM
	SINGLE CONDUIT:				STEAM OR HITEMP WATER, COST INCLUDES FITTINGS, ACCESSORIES, 1 M, EXCAVATION, BACKFILL AND TESTING
	150 MM		M	\$380.00	32 MM PIPE
	200 MM		M	\$407.00	40 MM PIPE
	200 MM		M	\$413.00	50 MM PIPE
	250 MM		M	\$500.00	65 MM PIPE
	250 MM		M	\$537.00	75 MM PIPE
	280 MM		M	\$647.00	100 MM PIPE
	380 MM		M	\$743.00	150 MM PIPE
82220	HOT WATER LINES				
	COMMON CONDUIT:				INCLUDES FITTINGS, ACCESSORIES, 1 M EXCAVATION, BACKFILL & TESTING
	300 MM		M	\$543.00	HW: 25 MM, RET: 25 MM
	330 MM		M	\$663.00	HW: 40 MM, RET: 40 MM
	380 MM		M	\$820.10	HW: 50 MM, RET: 50 MM
	450 MM		M	\$896.80	HW: 75 MM, RET: 75 MM
	530 MM		M	\$1,047.00	HW:100 MM, RET: 100 MM
	STEAM DIST MANHOLE, PREFAB STEEL, 2.5 M X 2.0 M HT		EA	\$16,800.00	VENT, MH VENT, NORMAL PIPING & INSTALLATION, CONDUIT, INCL LADDER
82410	GAS PIPE LINES				SEE CHART A
82610	AIR CONDITIONING/REFRIG PLANT				
	NEW BLDG		KW	\$919.00	EQUIPMENT ONLY
	EXISTING BLDG		KW	\$1,289.00	EQUIPMENT ONLY
83140	INDUSTRIAL WASTE TREATMENT PLANT		EA	\$1,781,470.00	2,000,000 LPM

APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS
(15 March 05)

CATEGORY CODE	ITEM	QUANTITY	UNIT	UNIT COST \$/UNIT	REMARK
83150	SEWAGE LIFT STATION		EA	\$206,580.00	4,000 LPD
83210	SANITARY SEWER				SEE CHART A
	SANITARY SEWER MANHOLES:				
	CONCRETE, CIP:				
	UP TO 2.5 M DEEP		VM	\$1,550.00	1.2 M ID, INCLUDES FOOTING, EXCAVATION, 600 MM DIA COVER & FRAME
	OVER 2.5 M DEEP		VM	\$1,653.00	
	CONCRETE, PRECAST:				
	UP TO 2.5 M DEEP		VM	\$1,033.00	
	OVER 2.5 M DEEP		VM	\$1,143.00	
	MISC:				
	CATCH BASINS		EA	\$2,269.00	1.2 M DEEP
	CATCH BASINS		EA	\$3,024.00	1.8 M DEEP
	CURB INLETS		EA	\$588.00	GUTTERMOUTH
83310	INCINERATOR		EA	\$41,210.00	90 KG PER HR PER UNIT (EQUIPMENT ONLY)
84210	WATER DISTRIBUTION LINES				SEE CHART A
84472	WATER PUMP STATION, NONPOTABLE				
	30 LPS		EA	\$75,170.00	INCLUDES DIESEL DRIVE, AUTO CONTROLS, FILLINGS & ACCESSORIES, COMPLETE W/ INSTALLATION COSTS (EQUIPMENT ONLY)
	60 LPS		EA	\$99,790.00	
	120 LPS		EA	\$112,210.00	
	150 LPS		EA	\$115,530.00	
84610	WATER STORAGE TANK				
	ELEVATED WATER STG TANK				
	200 M3		EA	\$374,770.00	INCLUDES STEEL STG TANK STANDPIPE, 38 M HIGH TOWER, VALVES AND STD FOUNDATIONS, BUT DOES NOT INCLUDE PUMPHOUSE
	400 M3		EA	\$470,120.00	
	600 M3		EA	\$563,260.00	
	1,000 M3		EA	\$648,640.00	
	2,000 M3		EA	\$1,043,360.00	
	3,000 M3		EA	\$1,441,310.00	
	4,000 M3		EA	\$1,832,710.00	
	GROUND STG TANK (WATER)				
	400 M3		EA	\$259,480.00	INCLUDES CONCRETE TANK AND STD FOUNDATIONS, BUT DOES NOT INCLUDE EXTERNAL PIPING AND PUMPING
	1,000 M3		EA	\$430,210.00	
	2,000 M3		EA	\$529,970.00	
	4,000 M3		EA	\$711,820.00	
	8,000 M3		EA	\$1,025,600.00	
	16,000 M3		EA	\$1,622,280.00	
84620	RESERVOIR, POTABLE				
	1,000 M3		EA	\$419,090.00	INCLUDES 150 MM CONCRETE FLOOR SLAB, ORDINARY EXCAVATION AND PUMPING WITHIN
	2,000 M3		EA	\$558,870.00	
	4,000 M3		EA	\$771,680.00	
	8,000 M3		EA	\$1,186,180.00	

APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS
(15 March 05)

CATEGORY CODE	ITEM	QUANTITY	UNIT	UNIT COST \$/UNIT	REMARK
	16,000 M3		EA	\$1,949,360.00	
851XX	ROADS				INCLUDE DRIVEWAYS, EXCLUDES VEHICLE PARKING
	ASPHALT CONCRETE SURFACE				
	40 MM		M2	\$4.62	FOR PAVEMENT ONLY, A/C SURFACE, NO EARTHWORK INCLUDED, URBAN AREA
	50 MM		M2	\$5.96	
	75 MM		M2	\$7.78	
	CONCRETE				
	150 MM		M2	\$34.03	3.65 METER PASS FIXED FORM, JOINTS, FINISHING, CURING, URBAN AREA, DOES NOT INCL REINF
	200 MM		M2	\$46.18	
	250 MM		M2	\$53.47	
	300 MM		M2	\$61.98	
	BASE COURSE (CRUSHED STONES):				
	100 MM		M2	\$6.32	INCLUDES MATERIAL, EQUIPMENT & COMPACTION, NO EARTHWORK INCLUDED
	150 MM		M2	\$9.48	
	200 MM		M2	\$13.37	
	300 MM		M2	\$20.66	
	BASE COURSE (BANK RUN GRAVEL):				
	150 MM		M2	\$4.74	
	230 MM		M2	\$6.68	
	300 MM		M2	\$8.87	
851XX	ROADS				
	BASE COURSE (BITUM. CONCRETE):				
	100 MM		M2	\$8.63	
	150 MM		M2	\$11.06	
	200 MM		M2	\$14.58	
	250 MM		M2	\$17.01	
	150 MM X 200 MM CURB/GUTTER		M	\$56.67	CONCRETE
852XX	SIDEWALK & OTHER PAVEMENTS				INCLUDES VEHICLE PARKING AREAS, PEDESTRIAN WALKWAYS, ETC. SEE CATCODE 851XX
85220	SIDEWALKS & WALKWAYS				
	100 MM CONCRETE		M2	\$47.03	INCLUDES GRADING & FORMING
	65 MM ASPHALT CONCRETE		M2	\$22.97	
86010	RAILROAD TRACKS W/ TIES AND BALLAST		M	\$896.00	100# RAIL, STANDARD GAUGE COMPLETE. PARALLEL TRACKS COUNTED SEPARATELY
87110	STORM SEWER				SEE CHART A
87210	FENCING AND WALLS				
	CHAIN LINK:				
	2.0 M HIGH		M	\$66.67	TYPE A (9 GA) INCLUDES 3 STRAND BARBED WIRE
	2.5 M HIGH		M	\$80.01	

APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS
(15 March 05)

CATEGORY CODE	ITEM	QUANTITY	UNIT	UNIT COST \$/UNIT	REMARK
	3.0 M HIGH		M	\$93.34	
	FENCE TOPPING:				
	BARRED TAPE		M	\$33.00	STAINLESS STEEL, MIL-B-52775 TYPE II
87250	ENTRANCE GATES				
	CHAIN LINK				2.5 M HIGH - 9 GA
	1.25 M WIDE		EA	\$322.00	
	3.5 M SINGLE		EA	\$879.00	FOR MOTOR OPERATED (SWING) ADD \$3,150
	7.5 M PAIR		EA	\$1,537.00	FOR MOTOR OPERATED (SWING) ADD \$3,150
	11.0 M PAIR		EA	\$2,116.00	FOR MOTOR OPERATED (SLIDE) ADD \$4,410
88110	WATER SPRINKLER SYSTEMS (186 M2, PROTECTED AREA ONLY, INCL GATE VALVE)				
	WET PIPE		M2	\$45.00	PROTECTED AREA ONLY
	DRY PIPE		M2	\$50.31	PROTECTED AREA ONLY
	DELUGE		M2	\$67.81	PROTECTED AREA ONLY, EXCLUDES DELUGE VALVE, PUMPING ELEVATED WATER STG, & EXTERIOR PIPING
	DRAFT CURTAINS		M2	\$109.40	CURTAIN AREA SUPPORTED BY EXISTING TRUSSES (HANGERS)
89240	FIRE HYDRANTS, 125 mm VALVE		EA	\$2,148.00	2 M DEEP, INCL EXCAVATION
93210	SITE CLEARING & GRADING				
	GRADING:				
	ROUGH		M2	\$5.59	OPEN AREA, AVG 600 MM C/F
	FINE		M2	\$1.58	3 PASSES WITH ROLLER
	SITE CLEARING & GRUBBING		HA	\$10,180.00	MEDIUM DENSE AREAS
	BORROW		M3	\$19.94	UNCLASSIFIED, 8 KM HAUL
93220	LANDSCAPE AND PLANTING				
	TOPSOIL:				
	HAUL & SPREAD		M3	\$27.69	
	STRIP/STOCKPILE		M2	\$1.94	150 MM DEEP
	MULCHING:				
	WOOD CHIPS		M2	\$3.16	50 MM DEEP
	GRASS:				
	SEEDING		M2	\$0.97	HYD W/ FERTILIZER
	SODDING		M2	\$8.26	25 MM DEEP BLUE GRASS
93310	DEMOLITION W/ DISPOSAL				
	BUILDING: 930 M2, 3M CEILING HGT, 40 KM HAUL:				(ASBESTOS REMOVAL/DISPOSAL NOT INCLUDED. COST ESTIMATE FOR THIS WORK ITEM SHOULD BE BASED ON SITE SURVEY/EVALUATION AND LOCAL EXPERIENCE, AND SEPARATELY IDENTIFIED.)
	CONCRETE		M2	\$50.31	WALL SURFACE AREA
	STEEL FRAME BUILDING		M2	\$44.84	WALL SURFACE AREA
	MASONRY OR WOOD FRAME BLDG		M2	\$38.28	WALL SURFACE AREA
	CONCRETE SLAB UPTO 150 MM THICK		M2	\$163.00	
	BUILDING INTERIOR		M2	\$74.37	GUTTING INTERIOR

APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS
(15 March 05)

CATEGORY				UNIT COST	
<u>CODE</u>	<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>\$/UNIT</u>	<u>REMARK</u>
	LEAD PAINT REMOVAL/DISPOSAL		M2	\$109.40	WALL SURFACE AREA
	PAVEMENT:		M2	\$18.23	150 MM CONCRETE
			M2	\$6.93	75 MM BITUMINOUS
93410	CUT AND FILL				
	EARTH:				
	CUT & FILL, 200 HP DOZER		M3	\$10.37	COMMON EARTH, 300' HAUL
	EXCAVATION, 3.2 KM ROUND TRIP		M3	\$11.16	COMMON EARTH
	TRENCH-MACHINE		M3	\$7.58	1.25 M DEEP/.6M WIDE
	TRENCH-HAND		M3	\$57.15	
	BACKFILL-MACHINE		M3	\$9.04	INCLUDES COMPACTION
	BACKFILL-HAND		M3	\$43.86	INCLUDES COMPACTION
	ROCK:				
	ROCK, HARD		M3	\$114.30	DRILL BLAST & MACHINE
	SHALE, MEDIUM		M3	\$59.81	RIPPER DOZER AND LOAD
	TRENCH-HAND		M3	\$188.70	
88040	AT/FP VEHICULAR BARRICADES				
Barrier Standards SD-STD-02.01 specifies perpendicular barrier impact by a 15,000 lb. (6810 kg) vehicle "K" indicates the Dept of State certified barrier's maximum vehicle impact speed rating "L" indicates the test vehicle's distance of penetration upon impact with barrier K12 = 50 mph (880 kph) L3 = 3 ft. (915 mm) K8 = 40 mph (65 kph) L2 = 3 ft. to 20 ft. (915 mm to 6.1 m) K4 = 30 mph (48 kph) L1 = 20 ft. to 50 ft. (6.1 m to 15.3 m) Note: Electrical connection costs are only included up to five feet from the unit. Additional electrical power requirements to be added separately. All active fixed barriers with a remote control panel include costs for barrier installation, safety loops, traffic arm, and traffic lights. CCTV, cameras, alarms, etc. not included with these costs.					
	PORTABLE BEAM BARRICADE		EA	\$25,400.00	RATED K4/L2, NO FDN REQUIRED, MOVE WITH FORKLIFT, STOPS 15,000 LB VEHICLE AT 30 MPH
	PORTABLE HYDRAULIC BARRICADE		EA	\$35,560.00	TRANSPORTABLE RISING ROAD PLATE BARRICADE, SET UP WITH FORKLIFT, STOPS 15,000 LB VEHICLE AT 30 MPH
	PORTABLE HEDGEHOG BARRICADE		EA	\$3,048.00	BARRICADE MADE OF PAINTED STRUCTURAL STEEL, REMOVABLE PNEUMATIC TIRES AND TOW BAR, 12' LONG
	WEDGE BARRICADE		EA	\$55,890.00	24" HIGH, 9' LONG, REMOTE CONTROL PANEL
	WEDGE BARRICADE		EA	\$60,970.00	K4/L2 RATED, 30" HIGH, 9' LONG, REMOTE CONTROL PANEL, STOPS 15,000 LB VEHICLE AT 30 MPH
	HYDRAULIC RISING ROAD PLATE		EA	\$55,890.00	PLATE RISES TO 18" HIGH, SURFACE MOUNTED, 12' LENGTH, REMOTE CONTROL PANEL, STOPS 15,000 LB VEHICLE AT 63 MPH
	HYDRAULIC WEDGE		EA	\$71,130.00	K12/L2 RATED, 9' WIDE X 3'-2" HIGH, STOPS VEHICLE AT 50 MPH, ZERO PENETRATION
	HYDRAULIC RISING ROAD PLATE		EA	\$40,640.00	PLATE RISES TO 18" HIGH, SURFACE MOUNTED, 10' LENGTH, 1' THICK STEEL PLATE, STOPS 6,000 LB VEHICLE AT 40 MPH
	HYDRAULIC RISING ROAD PLATE		EA	\$60,970.00	K12/L2 RATED, PLATE RISES TO 39" HIGH, SURFACE MOUNTED, REMOTE CONTROL PANEL, STOPS 15,000 LB VEHICLE AT 70 MPH
	RISING ROAD PLATE		EA	\$55,890.00	K12/L2 RATED, PLATE RISES TO 18" HIGH, SURFACE MOUNTED, REMOTE CONTROL PANEL, STOPS 15,000 LB VEHICLE AT 63 MPH

APPENDIX A - FACILITY UNIT COST TABLE
PART II - SUPPORT FACILITIES AND ITEMS
(15 March 05)

CATEGORY CODE	ITEM	QUANTITY	UNIT	UNIT COST \$/UNIT	REMARK
	RISING ROAD PLATE		EA	\$57,920.00	K12/L2 RATED, PLATE RISES TO 39" HIGH, SHALLOW FOUNDATION TO 18" DEPTH, 9' LENGTH, STOPS 15,000 LB VEHICLE AT 50 MPH
	POP-UP BOLLARD SYSTEM		EA	\$50,810.00	K4/L2 RATED, HYDRAULIC OR PNEUMATIC, SET OF THREE BOLLARDS, 13.25" DIA, 35" HIGH
	POP-UP BOLLARD SYSTEM		EA	\$52,840.00	K12/L2 RATED, HYDRAULIC, REMOTE CONTROL PANEL, 35" HIGH, 15.25" DIA, STOP-GO SIGNAL ARMS AND LIGHTS, SUMP PUMPS, STOPS 15,000 LB VEHICLE AT 50 MPH, ADD \$10,000 FOR EACH ADDL BOLLARD UP TO FIVE ADDL
	POP-UP BOLLARD SYSTEM		EA	\$50,810.00	HYDRAULIC, SET OF THREE BOLLARDS, 8.63" DIA, 24" HIGH, REMOTE CONTROL PANEL, ADD \$5,000 FOR EACH ADDL BOLLARD UP TO SEVEN ADDL
	POP-UP BOLLARD SYSTEM		EA	\$66,050.00	K4/L2 RATED, HYDRAULIC, SET OF THREE BOLLARDS, 13.25" DIA, 35" HIGH, REMOTE CONTROL PANEL, STOP-GO SIGNAL ARMS AND LIGHTS, SUMP PUMPS, STOPS 15,000 LB VEHICLE AT 30 MPH
	POP-UP BOLLARD SYSTEM		EA	\$60,970.00	K8/L2 RATED, HYDRAULIC, SET OF THREE BOLLARDS, 12.25" DIA, 35" HIGH, REMOTE CONTROL PANEL, STOP-GO SIGNAL ARMS AND LIGHTS, SUMP PUMPS, STOPS 15,000 LB VEHICLE AT 40 MPH
	MANUAL POP-UP BOLLARD SYSTEM		EA	\$5,081.00	K4/L2 RATED, COUNTER BALANCED MANUAL LIFT, 10.75" DIA, 30" HIGH
	MANUAL POP-UP BOLLARD SYSTEM		EA	\$4,064.00	24" HIGH, STOPS 10,000 LB VEHICLE AT 48 MPH AND STOPS 13,200 LB VEHICLE AT 38 MPH
	CRASH BEAM BARRICADE		EA	\$45,720.00	K4/L2 RATED, HYDRAULIC, CONCRETE BOLLARD MOUNTED, REMOTE CONTROL PANEL, STOPS 15,000 LB VEHICLE AT 30 MPH
	CRASH CABLE BEAM BARRICADE SWING GATE, MANUALLY OPERATED		EA	\$12,190.00	K4/L2 RATED, MANUAL HORIZONTAL SWING CRASH BEAM BARRIER, CONCRETE BOLLARD MOUNTED, STOPS 10,000 LB VEHICLE AT 15 MPH
	CABLE BEAM BARRICADE, HYDRAULIC		EA	\$40,640.00	K4/L2 RATED, HYDRAULIC, CONCRETE BOLLARD MOUNTED, STOPS 10,000 LB VEHICLE AT 15 MPH
	CRASH BEAM BARRICADE, HYDRAULIC		EA	\$50,810.00	K4/L2 RATED, HYDRAULIC, CONCRETE BOLLARD MOUNTED, STOPS 15,000 LB VEHICLE AT 30 MPH
	SLIDING LINEAR CRASH GATE		EA	\$63,000.00	K4/L2 RATED, 9' HIGH x 12' WIDE CLEAR OPENING GATE WITH GROUND TRACK, LINEAR GATE OPERATOR, REMOTE CONTROL PANEL, STOP-GO SIGNAL LIGHTS, STOPS 15,000 LB VEHICLE AT 50 MPH
	MANUAL CRASH SWING GATE		EA	\$15,240.00	9' HIGH x 12' WIDE CLEAR OPENING GATE
	HYDRAULIC ROLLING CRASH GATE		EA	\$48,770.00	9' HIGH x 12' WIDE CLEAR OPENING GATE, GATE LEAF LINEAR SLIDE ASSEMBLY, DRIVE SIDE GATE LEAF SUPPORTS AND GUIDES, LINEAR GATE OPERATOR, HYDRUALIC PUMP DRIVEN RACK AND PINION OPERATOR, REMOTE CONTROL PANEL, STOP-GO SIGNAL LIGHTS
	SLIDING CANTILEVER CRASH GATE		EA	\$53,850.00	9' HIGH x 12' WIDE CLEAR OPENING GATE, GATE LEAF LINEAR SLIDE ASSEMBLY, DRIVE SIDE GATE LEAF SUPPORTS AND GUIDES, LINEAR GATE OPERATOR, HYDRUALIC PUMP DRIVEN RACK AND PINION OPERATOR, REMOTE CONTROL PANEL, STOP-GO SIGNAL LIGHTS. THIS GATE DOES NOT NEED TRACKS, WHEELS, OR ROLLER PATH.
	PASSIVE VEHICLE BARRIER, SURFACE MOUNTED SABRE TOOTH CONTROLLER		EA	\$610.00	SURFACE MOUNTED TIRE SPIKES, 3' WIDE, MANUALLY OPERATED

CHART A To Appendix A, Part II PIPING - SITEWORK UTILITIES

SIZE MM	UNIT	BLACK STEEL		SIZE MM	UNIT	PVC	
		\$				\$	
25	M	40.00		25	M		
50	M	58.00		50	M	21.10	
75	M	71.70		75	M	31.50	
100	M	88.70		100	M	41.90	
150	M	109.00		150	M	63.00	
250	M	237.40		250	M	81.70	
300	M	339.00		300	M	102.80	
450	M	447.40		450	M		
600	M	762.40		600	M		
900	M			900	M		
1500	M			1500	M		
SIZE MM	UNIT	CORRUGATED		SIZE MM	UNIT	HDPE	
		\$				\$	
25	M			25	M		
50	M			50	M		
75	M			75	M		
100	M			100	M	44.20	
150	M	36.70		150	M	64.00	
250	M	56.70		250	M	86.10	
300	M	67.30		300	M	161.80	
450	M	95.00		450	M	264.00	
600	M	158.70		600	M		
900	M	246.40		900	M		
1500	M	664.10		1500	M		
SIZE MM	UNIT	DUCTILE IRON		SIZE MM MM	UNIT	CONCRETE	
		\$				PLAIN \$	REINF. \$
25	M			25	M		
50	M			50	M		
75	M			75	M		
100	M	67.30		100	M		
150	M	76.70		150	M	50.20	
250	M	135.00		250	M	58.60	
300	M	171.40		300	M	65.00	84.10
450	M	301.00		450	M	103.20	118.90
600	M	405.00		600	M	118.90	154.40
900	M			900	M		392.60
1500	M			1500	M		613.00
SIZE MM	UNIT	REINF. PLASTIC		SIZE MM	UNIT	VITRIFIED CLAY	
		\$				STANDARD STRENGTH \$	EXTRA STRENGTH \$
25	M			25	M		
50	M			50	M		
75	M	34.70		75	M		
100	M	62.30		100	M	25.10	28.80
150	M	76.30		150	M	34.80	38.50
250	M	173.40		250	M	61.60	71.30
300	M	212.40		300	M	73.40	81.10
450	M			450	M	159.80	194.60
600	M			600	M	325.60	389.20
900	M			900	M	664.90	740.00
1500	M						

CHART A To Appendix A, Part II PIPING - SITEWORK UTILITIES

NOTES:

1. Black Steel, schedule 40, welded.
2. Corrugated metal piping, galvanized 16 gage up to 450mm, 14 gage for 600mm, 12 gage up to 1500mm.
3. Ductile iron, cement lined, class 50 water pipe, 5.5m in length, and mechanical joint.
4. Reinforced Plastic, fiberglass reinforced, plain end pipe.
5. PVC, schedule 40, Class 150 pipe.
6. Cost includes furnishing and installing pipe only. Trenching, bedding, backfill and compaction must be added to these costs.
7. For cathodic protection (if required), add 14% of total piping cost.

CHART B

SOLAR ENERGY SYSTEM COST ESTIMATING*

BUILDING AREA ** (M2)		SOLAR SYSTEM COST (\$)
-----		-----
UP TO	1395.00	\$50.50 per m2. *** plus \$35,000.00
1396	4645.00	\$35.00 per m2. *** plus \$51,000.00
4646	AND LARGER	\$17.5 per m2 *** plus \$140,000.00

* Include solar collection panels, water supply, pumps, pipelines and expansion tank

* Include only heated and/or cooled portions of facilities.

**Resulting dollar figure rounded up to next thousand dollar figure.

CHART C
METRIC/ENGLISH SYSTEMS

<u>QUANTITY FROM</u>	<u>MULTIPLY BY</u>	<u>TO OBTAIN</u>
LENGTH inch	25.400000	millimeter
foot	0.304800	meter
yard	0.914400	meter
mile (U.S. Status)	1.609344	kilometer
millimeter	0.039370	inch
meter	3.280840	foot
meter	1.093613	yard
kilometer	0.621370	mile
AREA square inch	645.160300	square millimeter
square foot	0.092903	square meter
square yard	0.836127	square meter
square mile	2.589998	square kilometer
acre	4046.873000	square meter
acre	0.404687	hectare
square millimeter	0.001550	square inch
square meter	10.763910	square foot
square meter	1.195990	square yard
square kilometer	0.386101	square mile
square meter	0.000247	acre
hectare	2.471044	acre
VOLUME cubic inch	16387.060000	cubic millimeter
cubic foot	0.028316	cubic meter
cubic yard	0.764555	cubic meter
gallon (U.S. liquid)	3.785412	liter
quart (U.S. liquid)	0.946353	liter
* barrel (U.S. liquid)	0.158982	liter
cubic millimeter	0.000061	cubic inch
cubic meter	35.314662	cubic foot
cubic meter	1.307951	cubic yard
liter	0.264172	gallon
liter	1.056688	quart
cubic meter	6.290021	barrel
MASS ounce (avoirdupois)	28.349520	gram
pound (avoirdupois)	0.453592	kilogram
short ton	907.185000	kilogram
gram	0.035273	ounce
kilogram	2.204622	pound
kilogram	0.001102	short ton
ENERGY, HEAT AND WORK kilowatthour	3.600000	megajoule
btu	1.055056	kilojoule
horsepower hour	2.684520	megajoule
Megabtu/hr (Mbtu/hr)	293.071100	kilowatt
megajoule	0.277780	kilowatthour
kilojoule	0.947817	btu
megajoule	0.372506	horsepower hour
kilowatt	0.003413	Megabtu/hr

CHART C
METRIC/ENGLISH SYSTEMS

<u>QUANTITY FROM</u>		<u>MULTIPLY BY</u>	<u>TO OBTAIN</u>
POWER	ton (refrigeration)	3.517000	kw
	kw	1.000000	kw
	hp (electric)	0.745690	Kw
	kw	0.284333	ton (refrigeration)
	kw	1.000000	Kw (electric)
	Kw	1.341020	hp (electric)
CAPACITY	gpm (gallon per minute)	0.630910	lps (liter per second)
	lps	15.85	gpm
* one barrel = 42 U. S. Gallons			

15-Mar-2005

APPENDIX C (TM 5-800-4)
TRI-SERVICE MILITARY CONSTRUCTION PROGRAM (MCP) INDEX
FOR FY 2007 THRU FY 2011 PROGRAMS

<u>DATES</u>	<u>INDEX</u>	<u>ESCALATION PERSENTAGE FOR FISCAL YEAR</u>
1-Oct- 2003	2207	
1-Jan- 2004	2218	
1-Apr- 2004	2229	FY 04
1-Jul- 2004	2240	2.0%
1-Oct- 2004	2251	
1-Jan- 2005	2263	
1-Apr- 2005	2274	FY 05
1-Jul- 2005	2285	2.0%
1-Oct- 2005	2296	
1-Jan- 2006	2308	
1-Apr- 2006	2319	FY 06
1-Jul- 2006	2331	2.0%
1-Oct- 2006	2342	
1-Jan- 2007	2355	
1-Apr- 2007	2367	FY 07
1-Jul- 2007	2379	2.1%
1-Oct- 2007	2391	
1-Jan- 2008	2404	
1-Apr- 2008	2416	FY 08
1-Jul- 2008	2429	2.1%
1-Oct- 2008	2441	
1-Jan- 2009	2454	
1-Apr- 2009	2467	FY 09
1-Jul- 2009	2480	2.1%
1-Oct- 2009	2492	
1-Jan- 2010	2505	
1-Apr- 2010	2518	FY 10
1-Jul- 2010	2531	2.1%
1-Oct- 2010	2544	
1-Jan- 2011	2558	
1-Apr- 2011	2571	FY 11
1-Jul- 2011	2584	2.1%
1-Oct- 2011	2597	

Notes

1. Use **2.1%** per fiscal year for projection beyond FY **2011**
2. Tri - Service MCP Index (1,000) = 1 October 1979 ENR Historical Building Cost Index (1,900)
3. The MCP indexes were derived based upon the Inflation Rates (DoD Index, Rates in the Alternative) in Percentages published in PBD dated 22 December 2004 by the Under Secretary of Defense (Comptroller).
4. This revised index table supersedes the index table published on **09 January 2004**

TABLE I - SIZE ADJUSTMENT FACTORS**PART I - BUILDING (OTHER THAN BARRACKS & FAMILY HOUSING)**

SIZE RATIO	ADJUST FACTOR	SIZE RATIO	ADJUST FACTOR	SIZE RATIO	ADJUST FACTOR	SIZE RATIO	ADJUST FACTOR
< 0.05	1.2750	0.9000	1.0110	1.8000	0.9490	2.7000	0.9250
0.0500	1.2750	0.9500	1.0050	1.8500	0.9470	2.7500	0.9240
0.1000	1.2690	1.0000	1.0000	1.9000	0.9450	2.8000	0.9240
0.1500	1.2320	1.0500	0.9950	1.9500	0.9430	2.8500	0.9230
0.2000	1.2020	1.1000	0.9900	2.0000	0.9420	2.9000	0.9220
0.2500	1.1750	1.1500	0.9860	2.0500	0.9400	2.9500	0.9210
0.3000	1.1520	1.2000	0.9820	2.1000	0.9390	3.0000	0.9210
0.3500	1.1320	1.2500	0.9780	2.1500	0.9370	3.0500	0.9200
0.4000	1.1140	1.3000	0.9740	2.2000	0.9360	>3.05	0.9200
0.4500	1.0980	1.3500	0.9710	2.2500	0.9350		
0.5000	1.0840	1.4000	0.9680	2.3000	0.9330		
0.5500	1.0720	1.4500	0.9650	2.3500	0.9320		
0.6000	1.0600	1.5000	0.9620	2.4000	0.9310		
0.6500	1.0500	1.5500	0.9600	2.4500	0.9300		
0.7000	1.0410	1.6000	0.9570	2.5000	0.9290		
0.7500	1.0330	1.6500	0.9550	2.5500	0.9280		
0.8000	1.0250	1.7000	0.9530	2.6000	0.9270		
0.8500	1.0180	1.7500	0.9510	2.6500	0.9260		

NOTE: Size ratio is determined by dividing the proposed building size by the average size shown in Part I of Appendix A. To determine the size adjustment factor, use the closest size ratio from above table.

PART II - PROJECT SIZE ADJUSTMENTS FOR BARRACKS/FAMILY HOUSING

MILITARY FAMILY HOUSING		BARRACKS/ DORMITORIES	
PROJECT SIZE ADJUSTMENT FACTORS		PROJECT SIZE ADJUSTMENT FACTORS	
NUMBER OF UNITS in the project	PROJECT SIZE FACTOR	NUMBER OF ROOMS in the project	PROJECT SIZE FACTOR
1-9	1.25	1-99	1.07
10-19	1.15	100-149	1.03
20-49	1.10	150-199	1.00
50-99	1.04	200-299	0.97
100-199	1.00	300+	0.95
200-299	0.93		
300+	0.90		